

AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A heat resistant coated member comprising:

a substrate made of a material selected from the group consisting of Mo, Ta, W, Zr, and carbon; and

a coating of rare earth-containing oxide thereon, the rare earth-containing oxide coating including a surface layer having a hardness of at least 50 HV in Vickers hardness.

2. (Previously Presented) The coated member of claim 1, wherein the rare earth-containing oxide coating has a surface roughness of up to 20 μm in centerline average roughness Ra.

3-5. (Canceled)

6. (Previously Presented) A heat resistant coated member comprising:

a substrate having a coefficient of linear expansion of at least 4×10^{-6} (1/K); and

a layer comprising rare earth-containing oxide coated thereon.

7. (Previously Presented) The coated member of claim 6, wherein the coating layer comprises at least 80% by weight of a rare earth oxide and the balance of another metal oxide which is mixed, combined or laminated therewith.

8. (Previously Presented) A heat resistant coated member comprising:

- a substrate having a coefficient of linear expansion of at least 4×10^{-6} (1/K); and
- a layer consisting of rare earth oxide coated thereon.

9. (Previously Presented) The coated member of claim 6, wherein the rare earth oxide is mainly composed of an oxide of at least one element selected from the group consisting of Dy, Ho, Er, Tm, Yb, Lu, and Gd.

10. (Previously Presented) The coated member of claim 6, wherein said coating layer has a thickness of 0.02 mm to 0.4 mm.

11. (Previously Presented) The coated member of claim 6, wherein said coating layer has been formed by thermal spraying.

12. (Previously Presented) The coated member of claim 6, which is used in the sintering of a powder metallurgical metal, cermet or ceramic material in vacuum or an inert or reducing atmosphere.

13. (Canceled)

14. (Previously Presented) A heat resistant coated member comprising:
a metal, carbon, or carbide, nitride or oxide ceramic substrate;

an intermediate coating layer on the substrate comprising a lanthanoid oxide, an oxide of Y, Zr, Al or Si, a mixture of these oxides, or a complex oxide of these elements; and

a coating layer on the intermediate coating layer comprising a complex oxide of yttrium and a Group 3B element, or a complex oxide of yttrium, a lanthanoid and a Group 3B element.

15. (Canceled)

16. (Previously Presented) A heat resistant coated member comprising:

a metal, carbon, or carbide, nitride or oxide ceramic substrate;

an intermediate coating layer on the substrate comprising a metal selected from the group consisting of Mo, W, Nb, Zr, Ta, Si and B, or a carbide or nitride thereof; and

a coating layer on the intermediate coating layer comprising a complex oxide of yttrium and a Group 3B element, or a complex oxide of yttrium, a lanthanoid and a Group 3B element.

17. (Canceled)

18. (Previously Presented) A heat resistant coated member comprising:

a metal, carbon, or carbide, nitride or oxide ceramic substrate;

an intermediate coating layer on the substrate comprising ZrO_2 , Y_2O_3 , Al_2O_3 or a lanthanoid oxide, a mixture of these oxides, or a complex oxide of Zr, Y, Al or lanthanoid element, and a metal selected from the group consisting of Mo, W, Nb, Zr, Ta, Si and B; and

a coating layer on the intermediate coating layer comprising a complex oxide of yttrium and a Group 3B element, or a complex oxide of yttrium, a lanthanoid and a Group 3B element.

19. (Previously Presented) The coated member of claim 14, wherein the complex oxide of yttrium and a Group 3B element contains up to 80% by weight of Y_2O_3 and at least 20% by weight of Al_2O_3 .

20. (Previously Presented) A heat resistant coated member comprising:
a metal, carbon, or carbide, nitride or oxide ceramic substrate;
an intermediate coating layer on the substrate comprising a lanthanoid oxide, an oxide of Y, Zr, Al or Si, a mixture of these oxides, or a complex oxide of these elements; and
a coating layer on the intermediate coating layer comprising an oxide of a lanthanoid element, aluminum or yttrium.

21-25. (Canceled)

26. (Previously Presented) A heat resistant coated member comprising:
a carbon substrate, an interlayer of Yb_2O_3 formed thereon; and
a coating layer formed on the interlayer and comprising a complex oxide consisting essentially of up to 80% by weight of Y_2O_3 and at least 20% by weight of Al_2O_3 .

27. (Previously Presented) A heat resistant coated member comprising:

a carbon substrate, an interlayer of ZrO_2 formed thereon; and
a coating layer formed on the interlayer and comprising a complex oxide consisting essentially of up to 80% by weight of Y_2O_3 and at least 20% by weight of Al_2O_3 .

28. (Previously Presented) A heat resistant coated member comprising:
a carbon substrate, an interlayer of ZrO_2 and Y_2O_3 formed thereon; and
a coating layer formed on the interlayer and comprising a complex oxide consisting essentially of up to 80% by weight of Y_2O_3 and at least 20% by weight of Al_2O_3 .

29. (Previously Presented) A heat resistant coated member comprising:
a carbon substrate, an interlayer of tungsten formed thereon; and
a coating layer formed on the interlayer and comprising a complex oxide consisting essentially of up to 80% by weight of Y_2O_3 and at least 20% by weight of Al_2O_3 .